Journal of Magnetism and Magnetic Materials 122 (1993) xv–xviii
North-Holland

Contents

Proceedings of the Sixth International Conference on Magnetic Fluids

1. Synthesis and description of magnetic fluids

Rivas, J., M.A.L. Quintela, M.G. Bonome, R.J. Duro and J.M. Greneche
Production and characterization of FeB amorphous particles 1

Taketomi, S., Y. Ozaki, K. Kawasaki, S. Yuasa and H. Miyajima
Transparent magnetic fluid: preparation of YIG ultrafine particles 6

Nakatani, I., M. Hijikata and K. Ozawa
Iron-nitride magnetic fluids prepared by vapor-liquid reaction and their magnetic properties 10

Yamamoto, H., T. Kanno and I. Nakatani
Effects of heat treatment on properties of Co magnetic fluids 15

Safonenko, O.K., A.G. Reks and N.E. Volkova
Specific features of temperature dependence of the thermal conductivity of water-based magnetic fluids 19

Davies, K.J., S. Wells and S.W. Charles
The effect of temperature and oleate adsorption on the growth of maghemite particles 24

Fujita, T., J. Mochizuki and I.J. Lin
Viscosity of electrorheological magneto-dielectric fluid under electric and magnetic fields 29

2. Magnetic suspensions: preparation and properties

Kashevsky, B.E.
Computer simulation of ferrosuspension structuring in steady and rotating fields 34

Bibette, J.
Monodisperse ferrofluid emulsions 37

Neveu-Prin, S., V. Cabuil, R. Massart, P. Escaffre and J. Dussaud
Encapsulation of magnetic fluids 42

Fermigier, M. and A.P. Gast
Structure evolution in a paramagnetic latex suspension 46

Lemaire, E., G. Bossis and Y. Grasselli
Yield stress and structuration of magnetorheological suspensions 51

3. Liquid crystals and composites

Matuo, C.Y., F.A. Tourinho and A.M. Figueiredo Neto
Determination of the minimum concentrations of ferrofluid of $CoFe_2O_4$ required to orient liquid crystals 53

da Silva, M.F., F.A. Tourinho, L. Liebert and A.M. Figueiredo Neto
Anisotropic magnetic fluid: A magnetic liquid crystal? 57

Burylov, S.V. and Yu.L. Raikher
Magnetic Fredericksz transition in a ferronematic 62

Kopčanský, P., I. Sargánková, V. Švidroň, M. Mihalik, S. Mat'aš, M. Timko, J. Kováč, K. Csach and J. Miškuf
Study of composites of magnetic fluid with high-T_c superconducting particles 66

4. Techniques for investigation of magnetic fluids

Gogosov, V.V., A.V. Gorbunov, S.N. Tsurikov, A.A. Usanov and A.N. Vinogradov
Investigation of various magnetic fluids by means of ultrasonic methods 70

Furubayashi, T. and I. Nakatani
Mössbauer studies of iron magnetic fluids prepared by evaporation method 74

Boué, F., V. Cabuil, J.-C. Bacri and R. Perzynski
Small-angle neutron scattering of ionic ferrofluids 78

Lebedev, V.T., G.P. Gordeev, E.A. Panasiuk, L. Kiss, L. Cser, L. Rosta, Gy. Török and B. Farago
Ferrofluid dynamics: Spin-echo experiment 83

Tronconi, A.L., P.C. Morais, F. Pelegrini and F.A. Tourinho
Electron paramagnetic resonance study of ionic water-based manganese ferrite ferrofluids 90

5. Diffusion of particles and sedimentation

Raikher, Yu.L. and M.I. Shliomis
On the kinetics of establishment of the equilibrium concentration in a magnetic suspension 93

0304-8853/93/$06.00 © 1993 – Elsevier Science Publishers B.V. All rights reserved

Morozov, K.I.
The translational and rotational diffusion of colloidal ferroparticles 98

Naletova, V.A. and A.N. Tyatyushkin
Gravitational sedimentation of aggregates of ferromagnetic particles of magnetic fluid in uniform magnetic fields 102

Horváth, D. and P. Kopčanský
On the critical behaviour of magnetic dimer in a rotating magnetic field 106

Blums, E. and A.Yu. Chukhrov
Separation processes in polydisperse magnetic fluids 110

Seifert, A. and N. Buske
Analytical ultracentrifugation of magnetic fluids 115

6. Static magnetic and magneto-optic properties

Zhang, H. and M. Widom
Spontaneous magnetic order in strongly coupled ferrofluids 119

Colteu, A., A. Mailfert and J.P. Brancher
Clausius–Mossotti type of relation for magnetic fluids 123

Johansson, C., M. Hanson, P.V. Hendriksen and S. Mørup
The magnetization of magnetic liquids containing amorphous $Fe_{1-x}C_x$ particles 125

Williams, H.D., K. O'Grady, M.E. Hilo and R.W. Chantrell
Superparamagnetism in fine particle dispersions 129

Williams, H.D., K. O'Grady, S.W. Charles and K.J. Davies
Curie–Weiss behaviour in ferrofluids: the effects of particle size and distribution 134

Lukashevich, M.V., V.A. Naletova, V.A. Turkov and A.V. Nazarenko
A new method of measuring magnetization of a magnetic fluid not affecting its dispersive composition and calculation of volume distribution function 139

Sakhnini, L. and J. Popplewell
Interaction effects on magneto-optical birefringence in magnetic fluids 142

Sakhnini, L. and J. Popplewell
The magneto-optical birefringence and initial susceptibility of very dilute magnetic fluids 146

Kopčanský, P., D. Macko, D. Horváth, M. Kašpárková and T. Tima
Study of magneto-optical effects in a damping-oil-based magnetic fluid in the infrared region 150

Kalikmanov, V.I.
Suspensions of high-T_c superconducting particles: properties in alternating magnetic fields 154

7. Frequency-dependent properties

Fannin, P.C., B.K.P. Scaife and S.W. Charles
Relaxation and resonance in ferrofluids 159

Laurent, P., A.M. Konn, J.L. Mattei, Ph. Talbot and M. Le Floc'h
High-sensitivity and broad-band techniques applied to magnetic susceptibility measurements in ferrofluids 164

Fannin, P.C., B.K. Scaife and S.W. Charles
On the permittivity of magnetic colloids subject to a strong external magnetic field over the frequency range 50 kHz to 1 MHz 168

Raikher, Yu.L. and V.V. Rusakov
Orientational dynamics of a magnitude fluid with a viscoeleastic base 172

Shliomis, M.I. and V.I. Stepanov
Frequency dependence and long time relaxation of the susceptibility of the magnetic fluids 176

Siblini, A., L. Jorat and G. Noyel
Dielectric study of a ferrofluid Fe_2CoO_4 in dibutyl phthalate or diethylene glycol in the frequency range 1 mHz – 10 MHz 182

Déjardin, J.-L.
Nonlinear dielectric relaxation from the Smoluchowski equation for rotation in three dimensions in alternating fields 187

8. Rheology

Rubí, J.M., C. Salueña and A. Pérez-Madrid
The viscosity of a suspension of elongated magnetic dipoles 193

Shliomis, M.I. and V.I. Stepanov
Rotational viscosity of magnetic fluids: contribution of the Brownian and Néel relaxational processes 196

Okubo, M., S. Oshima, R. Yamane and S. Kamiyama
Local velocity measurement of magnetic fluid flow using laser optical fiber sensor 200

9. Hydrodynamics

Matsuno, Y., K. Araki and H. Yamamoto
Magnetic fluid flow in a two-dimensional channel 204

Stiles, P.J. and P.J. Blennerhassett
Stability of cylindrical Couette flow of a radially magnetized ferrofluid in a radial temperature gradient 207

Shaposhnikova, G.A.
Hydrodynamic flows and resonance phenomena in as capillary with an oscillating magnetic fluid 210

Shimada, K. and S. Kamiyama
Oscillatory pipe flow of a magnetic fluid in a strong magnetic field 214

Koike, K. and A. Sato
Oscillating flow driven by a magnetic fluid column under fluctuating magnetic field 217

Yamaguchi, H. and I. Kobori
Spherical Couette flow of a magnetic fluid with inner sphere rotation 221

Krakov, M.S.
Numerical simulation of the deformation of a cylindrical magnetofluid coating by a viscous fluid flow 224

Lebedev, A.V. and A.F. Pschenichnikov
Rotational effect: The influence of free or solid moving boundaries 227

Kordelyuk, A.S. and M.S. Krakov
Deformation of magnetofluid coating interface in a flat finned channel 231

10. Surfaces, drops and patterns

Bashtovoi, V.G. and R.E. Rosensweig
Excitation and study of subcritical waves on a magnetic fluid surface 234

Zimmels, Y.
Thermodynamics of wetting of solid surfaces by magnetizable fluids 241

Sudo, S., M. Ohaba, K. Katagiri and H. Hashimoto
Dynamic behavior of magnetic liquid drop on a solid base subject to magnetic field and vertical vibration 248

Boudouvis, A.G. and L.E. Scriven
Sensitivity analysis of hysteresis in deformation of ferrofluid drops 254

Wohlhuter, F.K. and O.A. Basaran
Effects of physical properties and geometry on shapes and stability of polarizable drops in external fields 259

Smirnov, N.N. and E.N. Wolleydt
Shape transition of magnetic fluid drops and jet cross sections 264

Goldstein, R.E., D.P. Jackson and S.A. Langer
Dynamics of pattern formation in magnetic fluids 267

Petit, P.A., M.P. de Albuquerque, V. Cabuil and P. Molho
Patterns in a ferrofluid film under normal fields: shape of thickness modulations and hysteresis 271

11. Chaotic state and critical phenomena

Cebers, A.
Chaos in polarization relaxation of a low-conducting suspension of anisotropic particles 277

Cebers, A.
Chaos: new trend of magnetic fluid research 281

Malik, S.K., H.K. Khosla and M. Singh
Chaos in nonlinear field instability 286

Kobori, I. and H. Yamaguchi
Thermomechanical instability and chaotic state 290

12. Heat and mass transfer

Bashtovoi, V.G., V.A. Chernobai and N.Q. Thang
Experimental study of heat transfer control in rectangular channel with magnetofluid coating 294

Aihara, T., J.-K. Kim, K. Okuyama and A. Lasek
Controllability of convective heat transfer of magnetic fluid in a circular tube 297

Takahashi, M., K. Shinbo, R. Ohkawa, M. Matsuzaki and A. Inoue
Nucleate pool boiling heat transfer of magnetic fluid in a magnetic field 301

Bashtovoi, V.G., G. Challant and O.Yu. Volkova
Boiling heat transfer in magnetic fluids 305

Bashtovoi, V.G., S.G. Pogirnitskaya, A.G. Reks and O.Yu. Volkova
Controlled heat transfer in two-component magnetofluid systems 309

Demchuk, S.A.
Heat transfer in narrow gaps filled with magnetorheological suspensions 312

Kikura, H., T. Sawada and T. Tanahashi
Natural convection of a magnetic fluid in a cubic enclosure 315

Aniss, S., J.P. Brancher and M. Souhar
Thermal convection in a magnetic fluid in an annular Hele–Shaw cell 319

Zahn, M. and P.N. Wainman
Effects of fluid convection and particle spin on ferrohydrodynamic pumping in traveling wave magnetic fields 323

13. Biological and medical applications

Roath, S.
Biological and biomedical aspects of magnetic fluid technology 329

Ruuge, E.K. and A.N. Rusetski
Magnetic fluids as drug carriers: Targeted transport of drugs by a magnetic field 335

De Cuyper, M. and M. Joniau
Magnetoproteoliposomes 340

Grow, D.T., S.V. Sonti, A. Bose and K. Raj
A report on the research performed under the Rosensweig grant 343

Pļaviņš, J. and M. Lauva
Study of colloidal magnetite-binding erythrocytes: Prospects for cell separation 349

Kirpotin, D.B., R. Kinne, A. Milton, E. Palombo-Kinne and F. Emmrich
Magnetic targeting of a therapeutic antibody using magnetotropic microspheres of the interpolyelectrolyte coacervation complex 354

Autenshlyus, A.I., N.A. Brusentsov and A. Lockshin
Magnetic-sensitive dextran-ferrite immunosorbents (for diagnostic and therapy) 360

Richards, A.J., T.E. Thomas, O.S. Roath, J.H.P. Watson, R.J.S. Smith and P.M. Lansdorp
Improved high gradient magnetic separation for the positive selection of human blood mononuclear cells using ordered wire filters 364

Chikov, V., A. Kuznetsov, A. Shapiro, S. Winoto-Morbach and W. Müller-Ruchholtz
Single cell magnetophoresis and its diagnostic value 367

Vladimirsky, M.A., A.A. Kuznetsov and V.I. Philippov
A magnetic concentration method using hydrosol of ferric particles for diagnosing tuberculosis 371

Chan, D.C.F., D.B. Kirpotin and P.A. Bunn, Jr.
Synthesis and evaluation of colloidal magnetic iron oxides for the site-specific radiofrequency-induced hyperthermia of cancer 374

Mikhailik, O.M., Y.V. Pankratov and E.A. Bakai
Biotransformation of intravenously injected finely dispersed iron powders 379

Papisov, M.I., A.B. Jr., B. Schaffer, N. Nossiff, T. Shen, R. Weissleder and T.J. Brady
Colloidal magnetic resonance contrast agents: effect of particle surface on biodistribution 383

14. Other applications

Nakatsuka, K.
Trends of magnetic fluid applications in Japan 387

Kordonsky, W.I.
Magnetorheological effect as a base of new devices and technologies 395

Bacri, J.-C., J. Lenglet, R. Perzynski and J. Servais
Magnetic fluid pressure sensor 399

Monin, J., O. Brevet-Philibert, S. Neveu, L. Delaunay and H. Gagnaire
A light polarization modulator using magnetic liquid intended for high precision optical instrumentation 403

Gerligand, P.Y., B.L. Jeune, J. Cariou and J. Lotrian
Polarimetric characterization of thin plates of ferrofluids: Application to active imagery 406

Vislovich, A.N., V.F. Medvedev, A.S. Dmitrichenko, G.A. Bondarenko and V.N. Morozov
A magnetic fluid gate as a new element in sealing technology 411

Mitsuya, Y., T. Abe and S. Matsunaga
Novel mechanism of self-injecting magnetic fluid seal applying switch of magnetic force direction on yoke surface 415

Mitsuya, Y., K. Tomita and M. Hosoya
Experimental study on splashing characteristics of magnetic fluid in a magnetic fluid seal 420

Sawada, T., H. Kikura, S. Shibata and T. Tanahashi
Lateral sloshing of a magnetic fluid in a container 424

Umehara, N. and K. Kato
Fundamental properties of magnetic fluid grinding with a floating polisher 428

Umehara, N., S. Mizuguchi, K. Kato and S. Nakamura
Microsurface finishing of borosilicate glass with magnetic fluid grinding 432

Cabuil, V., S. Neveu and R.E. Rosensweig
Introduction to the magnetic fluids bibliography 437

Magnetic fluids bibliography: Literature and Patents 439

Author index to volume 122 483

Subject index to volume 122 489